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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/931,544 | 08/16/2001 | Lutz Rapp | P01,0268 | 3251 |

7590 07/18/2002

SCHIFF HARDIN & WAITE
Patent Department
6600 Sears Tower
233 South Wacker Drive
Chicago, IL 60606

EXAMINER

CUNNINGHAM, STEPHEN C

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

3663

DATE MAILED: 07/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

SK

Office Action Summary

Application No.

09/931,544

Applicant(s)

RAPP, LUTZ

Examiner

Stephen C. Cunningham

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
 Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☒ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other: _____

DETAILED ACTION

Priority

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Drawings

Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "5" has been used to designate both transducer and a coupler. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. See the descriptions of figures 3 and 4.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 2, 5, 6, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kaede et al.

With respect to claim 1, Kaede et al. teach a method which inherently compensates for cross phase modulation, comprising the steps of:

obtaining a control signal, said signal controlling the modulator; and

supplying said control signal to the phase modulator so that said cross phase modulation (XPM) in the wavelength-division multiplex (WDM) signal is compensated. See, for example, figures 4, 2d, 3d and column 7, lines 20-56, column 6, lines 34-40, and column 9, line 62 through column 10 line 11. Saunders et al. teach that a method where the signal is pre-modulated, then transmitted through an optical fiber where in group delay walkoff causes a low pass filtering effect on the XPM. The same group delay walkoff occurs due to phase modulation which in turn causes the low pass filtering of XPM in the Kaede et al. reference.

With respect to claim 2, Kaede et al. teach further steps comprising:

tapping an optical measurement signal;

converting said optical measurement signal into an electrical signal; and

converting said electrical signal into a control signal.

See figures 5 and 6, column 7, lines 23-25, and column 8, lines 1-20.

With respect to claim 5, Kaede et al. teaches a fiber amplifier comprising:

a measurement coupler which couples out part of a WDM signal;

an opto-electrical converter;

an electrical amplifier; and

a phase modulator which receives a control signal and inherently compensates for XPM. See, for example, figures 2d, 3d, 4, 5, 6 and column 7, lines 20-56, column 6, lines 34-40, column 8, lines 1-20 and column 9, line 62 through column 10 line 11.

With respect to claim 6, Kaede et al. teach an electrical amplifier applying a sine function to the electrical signal. See column 7, lines 35-47.

With respect to claim 9, Kaede et al. teaches that the arrangement is connected immediately after the fiber amplifier, see figure 1, 4, 9, 10, 11; and that the arrangement is connected before the amplifier, see figure 12.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaede et al. }

With respect to claims 3 and 7, Kaede et al. fails to teach a step of delaying the WDM signal. It is well known in the art that information travels slower in an electrical circuit than in an optical transmission line. It would have been obvious to delay the WDM signal in order to coordinate the modulation of the WDM signal with the control signal.

With respect to claim 4, Kaede et al. fails to teach a step of measuring signal changes at an output of said phase modulator. It would have been obvious to modify the method by detecting at the output in order to guarantee the calibration of the apparatus.

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaede et al. in view of Becker et al.

Kaede et al. fails to teach that at least one of the measurement coupler and the phase modulator is inserted between a number of sections of an amplifier fiber. Becker et al. teach that multiple stages of amplifier fiber provides the benefit of significantly reducing noise while maintaining a high gain. It would have been obvious to modify the apparatus of Kaede et al. by distributing amplifier fiber around at least one of the measurement coupler and the phase modulator in order to reduce noise while maintaining a high gain. See pages 273-276.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Garthe et al.

Fujiwara et al.

Kuwabara

Korotky

Matera et al.

Henmi et al.

Tsushima.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen C. Cunningham whose telephone number is 703-605-4275. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on 703-306-4171. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9326 for regular communications and 703-872-9327 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

July 15, 2002



THOMAS H. TARCZA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600